

## SEQUENCE LISTING

DeBonte, Lorin R. Fan, Zhegong Miao, Guo-Hua

## <120> PLANTS HAVING MUTANT SEQUENCES THAT CONFER ALTERED FATTY ACID PROFILES

85

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90

				 gtc Val											336
				ctt Leu											384
			_	tac Tyr				_		-		_	_		432
				tcc Ser 150										-	480
-	_		-	aag Lys				-						_	528
				tta Leu											576
		_		gtc Val	_		_			_				_	624
				aac Asn	_					_	_		_		672
				gac Asp 230					_	_	_				720
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_	_		_	cct Pro		_				_	_				864
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tga			Ala					Ala					Tyr				1104
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1			<b>7</b> 7 -	<b>G</b> 1	Q1	7	<b>N</b> - +	<b>0</b> 1	17- 1	<b>0</b>	<b>D</b>	<b>.</b>		_	-	<b>a</b>	
Val   Gly   Glu   Leu   Lys   Lys   Ala   Ile   Pro   Pro   His   Cys   Phe   Lys   Arg   Ser   Ada   Ada   Ada   The   Pro   Arg   Sor   For   Sor		GIY	Ala	GIY		arg	мет	GIN	۷aı		Pro	Pro	ser	Lys	-	Ser	
Secondary   Seco	Glu	Thr	Asp		Ile	Lys	Arg	Val		Cys	Glu	Thr	Pro		Phe	Thr	
The   Pro   Arg   Ser   Phe   Ser   Tyr   Leu   Ile   Trp   Asp   Ile   Ile   Ile   Ile   Ala   Ser   So   So   So   So   So   So   So   S	Val	Gly		Leu	Lys	Lys	Ala		Pro	Pro	His	Cys		Lys	Arg	Ser	
Cys Phe Tyr Tyr Xaa Ala Thr Thr Tyr Phe Pro Leu Leu Pro His Pro 65	Ile		Arg	Ser	Phe	Ser	_	Leu	Ile	Trp	Asp		Ile	Ile	Ala	Ser	
Leu Ser Tyr Phe Ala Trp Pro Leu Tyr Trp Ala Cys Gln Gly Cys Val 85			Tyr	Tyr	Xaa			Thr	Tyr	Phe			Leu	Pro	His		
Leu Thr Gly Val Trp Val Ile Ala His Glu Cys Gly His His Ala Phe 100		Ser	Tyr	Phe			Pro	Leu	Tyr			Cys	Gln	Gly			
Ser       Asp       Tyr       Gln       Trp       Leu       Asp       Asp       Thr       Val       Gly       Leu       Ile       Phe       His       Ser         Phe       Leu       Leu       Val       Pro       Tyr       Phe       Ser       Trp       Lys       Tyr       Ser       His       Arg       Ser       His         His       Ser       Asn       Thr       Gly       Ser       Leu       Glu       Arg       Asn       Phe       Val       Pro       Lys       Info       Inf	Leu	Thr	Gly			Val	Ile	Ala			Cys	Gly	His			Phe	
Phe         Leu         Leu         Val         Pro         Tyr         Phe         Ser         Trp         Lys         Tyr         Ser         His         Arg         Ser         His           130         130         130         135         135         140         140         140         140         140         140         140         140         140         140         140         140         140         140         140         140         140         140         140         140         140         140         140         140         140         140         140         140         140         140         140         140         140         140         140         160         140         160         140         160         160         160         160         160         160         160         160         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170         170	Ser	Asp	_		Trp	Leu	Asp	_		Val	Gly	Leu			His	Ser	
His Ser Asn Thr Gly Ser Leu Glu Arg Asp Glu Val Phe Val Pro Lys 145	Phe			Val	Pro	Tyr			Trp	Lys	Tyr			Arg	Ser	His	
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Gly Arg Thr Val Met Leu Thr Val Gln Phe Thr Leu Gly Trp Pro Leu 180		Lys	Ser	Asp			Trp	Tyr	Gly			Leu	Asn	Asn			
Tyr Leu Ala Phe Asn Val Ser Gly Arg Pro Tyr Asp Gly Gly Phe Arg 195 200 205  Cys His Phe His Pro Asn Ala Pro Ile Tyr Asn Asp Arg Glu Arg Leu	Gly	Arg	Thr			Leu	Thr	Val			Thr	Leu	Gly	_		Leu	
Cys His Phe His Pro Asn Ala Pro Ile Tyr Asn Asp Arg Glu Arg Leu	Tyr	_	Λla		Λen	Val	Ser	Glv		Pro	Tyr	Asp	Gly		Phe	Arq	
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                                 265
                                                     270
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Asp Trp Phe Arg Gly Ala Leu Ala Thr Val Asp Arg Asp Tyr Gly Ile
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                                             300
Leu Asn Lys Val Phe His Asn Ile Thr Asp Thr His Val Ala His His
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                                         315
Pro Phe Ser Thr Met Pro His Tyr His Ala Met Glu Ala Thr Lys Ala
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                                     330
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Glu Thr Asp Thr Ile Lys Arg Val Pro Cys Glu Thr Pro Pro Phe Thr
             20
gto gga gaa oto aag aaa goa ato ooa oog oac tgt tto aaa ogo tog
                                                                       144
Val Gly Glu Leu Lys Lys Ala Ile Pro Pro His Cys Phe Lys Arg Ser
         35
atc cct cgc tct ttc tcc tac ctc atc tgg gac atc atc ata gcc tcc
                                                                       192
Ile Pro Arg Ser Phe Ser Tyr Leu Ile Trp Asp Ile Ile Ile Ala Ser
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                         55
tgc ttc tac tac ntc gcc acc act tac ttc cct ctc ctc cct cac cct
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Cys Phe Tyr Tyr Xaa Ala Thr Thr Tyr Phe Pro Leu Leu Pro His Pro
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			_		_		_		aag Lys	_				_		336
_	_		_			_	_		gtc Val							384
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									gac Asp				_		_	480
									aag Lys 170						_	528
						_	-	_	ttc Phe					_	_	576
									cct Pro		-				_	624
									tac Tyr							672
					_	_			ctc Leu	_	_	_				720
									gcc Ala 250							768
									ttc Phe							816
									cac His							864
									gtt Val	-	_	_				912
ttg	aac	aag	gtc	ttc	cac	aat	att	acc	gac	acg	cac	gtg	gcc	cat	cat	960

Leu Asn Lys Val Phe His Asn Ile Thr Asp Thr His Val Ala His His 305 310 315 320	
ccg ttc tcc acg atg ccg cat tat cac gcg atg gaa gct acc aag gcg Pro Phe Ser Thr Met Pro His Tyr His Ala Met Glu Ala Thr Lys Ala 325 330 335	1008
ata aag ccg ata ctg gga gag tat tat cag ttc gat ggg acg ccg gtg Ile Lys Pro Ile Leu Gly Glu Tyr Tyr Gln Phe Asp Gly Thr Pro Val 340 345 350	1056
gtt aag gcg atg tgg agg gag gcg aag gag tgt atc tat gtg gaa ccg Val Lys Ala Met Trp Arg Glu Ala Lys Glu Cys Ile Tyr Val Glu Pro 355 360 365	1104
gac agg caa ggt gag aag aaa ggt gtg ttc tgg tac aac aat aag tta Asp Arg Gln Gly Glu Lys Lys Gly Val Phe Trp Tyr Asn Asn Lys Leu 370 375 380	1152
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                    230
Phe Arg Tyr Ala Ala Gly Gln Gly Val Ala Ser Met Val Cys Phe Tyr
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                                265
Leu Gln His Thr His Pro Ser Leu Pro His Tyr Asp Ser Ser Glu Trp
                            280
Asp Trp Phe Arg Gly Ala Leu Ala Thr Val Asp Arg Asp Tyr Gly Ile
                        295
                                            300
Leu Asn Lys Val Phe His Asn Ile Thr Asp Thr His Val Ala His His
                    310
                                        315
Pro Phe Ser Thr Met Pro His Tyr His Ala Met Glu Ala Thr Lys Ala
                325
                                    330
Ile Lys Pro Ile Leu Gly Glu Tyr Tyr Gln Phe Asp Gly Thr Pro Val
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                                                                       96
Glu Thr Asp Asn Ile Lys Arg Val Pro Cys Glu Thr Pro Pro Phe Thr
gto gga gaa oto aag aaa goa ato ooa oog oao tgt tto aaa ogo tog
                                                                      144
Val Gly Glu Leu Lys Lys Ala Ile Pro Pro His Cys Phe Lys Arg Ser
                             40
atc cct cgc tct ttc tcc tac ctc atc tgg gac atc atc ata gcc tcc
                                                                      192
Lie Pro Arg Ser Phe Ser Tyr Leu Ile Trp Asp Ile Ile Ile Ala Ser
                         55
tgc ttc tac tac gtc gcc acc act tac ttc cct ctc ctc cct cac cct
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Cys Phe Tyr Tyr Val Ala Thr Thr Tyr Phe Pro Leu Leu Pro His Pro
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			_			ctc Leu			_	_	_			_	28
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						tcc Ser		_		_		_	_		43:
						gag Glu	_	_	_			_		_	480
						tac Tyr									528
						gtt Val									57:
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						ccc Pro									672
				_	_	ggc Gly			_	_	_				720
						gga Gly									768
						aat Asn									816
						ctg Leu 280									864
						gcc Ala									912

Ctg ttc tog acc atg ccg cat tat cat gcg atg gaa gct acg aag gcg   1008		aac Asn															960
The Lys Pro Itle Leu Gly Glu Tyr Tyr Gln Leu His Gly Thr Pro Val 340   340   345   345   345   350   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365   365	_		_		Met	_				Ala					Lys		1008
Val         Lys         Ala Met         Trp         Arg         Glu         Ala         Lys         Glu         Cys         Ile         Tyr         Val         Glu         Pro           gac         aag         gag         gag </td <td></td> <td>_</td> <td>_</td> <td>Ile</td> <td>_</td> <td></td> <td></td> <td></td> <td>Tyr</td> <td></td> <td></td> <td></td> <td></td> <td>Thr</td> <td></td> <td></td> <td>1056</td>		_	_	Ile	_				Tyr					Thr			1056
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The color of the	< 40	0 > 6															
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S	Glu	Thr	Asp		Ile	Lys	Arg	Val		Cys	Glu	Thr	Pro		Phe	Thr	
The book of the color of the	Val	Gly		Leu	Lys	Lys	Ala		Pro	Pro	His	Cys		Lys	Arg	Ser	
Cys         Phe         Tyr         Tyr         Val         Ala         Thr         Tyr         Phe         Pro         Leu         Pro         Fro         Pro         Pro <td>Ile</td> <td></td> <td></td> <td>Ser</td> <td>Phe</td> <td>Ser</td> <td>Tvr</td> <td>Len</td> <td>т 1 о</td> <td></td> <td></td> <td></td> <td></td> <td>Tle</td> <td>Ala</td> <td>Cor</td> <td></td>	Ile			Ser	Phe	Ser	Tvr	Len	т 1 о					Tle	Ala	Cor	
Leu Ser Tyr Phe Ala Trp Pro Leu Tyr Trp Ala Cys Gln Gly Cys Val 85	_							пси	ıте	Trp	Asp		116	110		261	
Leu Thr Gly Val Trp Val Ile Ala His Glu Cys Gly His His Ala Phe 100   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   110   11		FIIC	Tyr	Tyr	Val	Ala	55				Pro	60				Pro	
Ser       Asp       Tyr       Gln       Trp       Leu       Asp       Asp       Thr       Val       Gly       Leu       Ile       Phe       His       Ser         Phe       Leu       Leu       Val       Pro       Tyr       Phe       Ser       Trp       Lys       Tyr       Ser       His       Arg       Arg       His         His       Ser       Asn       Thr       Gly       Ser       Leu       Glu       Arg       Asp       Glu       Val       Phe       Val       Pro       Lys         145       Instruction       I			_	_	Ala	Ala 70	55 Thr	Thr	Tyr	Phe Trp	Pro 75	60 Leu	Leu	Pro	His Cys	Pro 80	
Phe         Leu         Leu         Val         Pro         Tyr         Phe         Ser         Trp         Lys         Tyr         Ser         His         Arg         Arg         His           His         130	Leu	Ser	Tyr	Phe Val	Ala 85	Ala 70 Trp	55 Thr Pro	Thr Leu	Tyr Tyr His	Phe Trp 90	Pro 75 Ala	60 Leu Cys	Leu Gln	Pro Gly His	His Cys 95	Pro 80 Val	
His Ser Asn Thr Gly Ser Leu Glu Arg Asp Glu Val Phe Val Pro Lys 145	Leu	Ser Thr	Tyr Gly Tyr	Phe Val 100	Ala 85 Trp	Ala 70 Trp Val	55 Thr Pro Ile	Thr Leu Ala Asp	Tyr Tyr His 105	Phe Trp 90 Glu	Pro 75 Ala Cys	60 Leu Cys Gly	Leu Gln His Ile	Pro Gly His	His Cys 95 Ala	Pro 80 Val Phe	
Lys Lys Ser Asp Ile Lys Trp Tyr Gly Lys Tyr Leu Asn Asn Pro Leu 165	Leu Leu Ser	Ser Thr Asp Leu	Tyr Gly Tyr 115	Phe Val 100 Gln	Ala 85 Trp Trp	Ala 70 Trp Val Leu	55 Thr Pro Ile Asp Phe	Thr Leu Ala Asp 120	Tyr Tyr His 105 Thr	Phe Trp 90 Glu Val	Pro 75 Ala Cys	60 Leu Cys Gly Leu Ser	Leu Gln His Ile 125	Pro Gly His 110 Phe	His Cys 95 Ala His	Pro 80 Val Phe Ser	
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Tyr Leu Ala Phe Asn Val Ser Gly Arg Pro Tyr Asp Gly Gly Phe Ala 195 200 205 Cys His Phe His Pro Asn Ala Pro Ile Tyr Asn Asp Arg Glu Arg Leu	Leu Ser Phe His 145	Ser Thr Asp Leu 130 Ser	Tyr Gly Tyr 115 Leu Asn	Phe Val 100 Gln Val Thr	Ala 85 Trp Trp Pro Gly	Ala 70 Trp Val Leu Tyr Ser 150	55 Thr Pro Ile Asp Phe 135 Leu	Thr Leu Ala Asp 120 Ser Glu	Tyr Tyr His 105 Thr Trp Arg	Phe Trp 90 Glu Val Lys Asp	Pro 75 Ala Cys Gly Tyr Glu 155	60 Leu Cys Gly Leu Ser 140 Val	Leu Gln His Ile 125 His	Pro Gly His 110 Phe Arg Val	His Cys 95 Ala His Arg Pro	Pro 80 Val Phe Ser His Lys 160	
Cys His Phe His Pro Asn Ala Pro Ile Tyr Asn Asp Arg Glu Arg Leu	Leu Leu Ser Phe His 145 Lys	Ser Thr Asp Leu 130 Ser Lys	Tyr Gly Tyr 115 Leu Asn Ser	Phe Val 100 Gln Val Thr Asp	Ala 85 Trp Trp Pro Gly Ile 165	Ala 70 Trp Val Leu Tyr Ser 150 Lys	55 Thr Pro Ile Asp Phe 135 Leu	Thr Leu Ala Asp 120 Ser Glu Tyr	Tyr Tyr His 105 Thr Trp Arg Gly Gln	Phe Trp 90 Glu Val Lys Asp Lys 170	Pro 75 Ala Cys Gly Tyr Glu 155 Tyr	60 Leu Cys Gly Leu Ser 140 Val	Leu Gln His Ile 125 His Phe Asn	Pro Gly His 110 Phe Arg Val Asn Trp	His Cys 95 Ala His Arg Pro	Pro 80 Val Phe Ser His Lys 160 Leu	
	Leu Ser Phe His 145 Lys	Ser Thr Asp Leu 130 Ser Lys Arg	Tyr Gly Tyr 115 Leu Asn Ser Thr	Phe Val 100 Gln Val Thr Asp Val 180	Ala 85 Trp Trp Pro Gly Ile 165 Met	Ala 70 Trp Val Leu Tyr Ser 150 Lys Leu	55 Thr Pro Ile Asp Phe 135 Leu Trp	Thr Leu Ala Asp 120 Ser Glu Tyr Val Gly	Tyr Tyr His 105 Thr Trp Arg Gly Gln 185	Phe Trp 90 Glu Val Lys Asp Lys 170 Phe	Pro 75 Ala Cys Gly Tyr Glu 155 Tyr Thr	60 Leu Cys Gly Leu Ser 140 Val Leu	Leu Gln His Ile 125 His Phe Asn Gly Gly	Pro Gly His 110 Phe Arg Val Asn Trp 190	His Cys 95 Ala His Arg Pro Pro 175 Pro	Pro 80 Val Phe Ser His Lys 160 Leu	

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Tyr Arg Tyr Ala Ala Val Gln Gly Val Ala Ser Met Val Cys Phe Tyr
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Gly Val Pro Leu Leu Ile Val Asn Gly Phe Leu Val Leu Ile Thr Tyr
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Leu Gln His Thr His Pro Ser Leu Pro His Tyr Asp Ser Ser Glu Trp
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Asp Trp Leu Arg Gly Ala Leu Ala Thr Val Asp Arg Asp Tyr Gly Ile
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                                            300
Leu Asn Lys Val Phe His Asn Ile Thr Asp Thr His Val Ala His His
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Leu Phe Ser Thr Met Pro His Tyr His Ala Met Glu Ala Thr Lys Ala
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                                    330
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gaa acc gac aac atc aag cgc gta ccc tgc gag aca ccg ccc ttc act
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Glu Thr Asp Asn Ile Lys Arg Val Pro Cys Glu Thr Pro Pro Phe Thr
                                 25
gto gga gaa cto aag aaa goa ato coa coq cao tqt tto aaa cqc toq
                                                                      144
Val Gly Glu Leu Lys Lys Ala Ile Pro Pro His Cys Phe Lys Arg Ser
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                             40
atc cct cgc tct ttc tcc tac ctc atc tgg gac atc atc ata gcc tcc
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Ile Pro Arg Ser Phe Ser Tyr Leu Ile Trp Asp Ile Ile Ile Ala Ser
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                         55
tgc ttc tac tac gtc gcc acc act tac ttc cct ctc ctc cac cct
                                                                      240
Cys Phe Tyr Tyr Val Ala Thr Thr Tyr Phe Pro Leu Leu Pro His Pro
65
                     70
ctc tcc tac ttc gcc tgg cct ctc tac tgg gcc tgc cag ggc tgc gtc
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Leu Ser Tyr Phe Ala Trp Pro Leu Tyr Trp Ala Cys Gln Gly Cys Val
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                                     90
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_	_	cag Gln	 _	_	_		_							384
		gtc Val					_		_		_	_		432
		act Thr				_	_	_			_		_	480
		gac Asp					_						_	528
		gtg Val 180											_	576
		ttc Phe				_			_				-	624
		cac His												672
		atc Ile												720
		gct Ala				_	_	_	_	_	_			768
		ctt Leu 260							-	_				816
_		acg Thr			_				_	_				864
		agg Arg												912
		gtc Val												960

_				_	_				gcg Ala 330	_	_	-				1008
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									gag Glu							1104
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tga																1155
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Glu	Thr	Asp	Asn 20	Ile	Lys	Arg	Val	Pro 25	Cys	Glu	Thr	Pro	Pro 30	Phe	Thr	
Val	Gly	Glu 35	Leu	Lys	Lys	Ala	Ile 40	Pro	Pro	His	Cys	Phe 45	Lys	Arg	Ser	
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Ser	Asp	Tyr 115		Trp	Leu	Asp	Asp 120		Val	Gly	Leu	Ile 125		His	Ser	
Phe	Leu 130		Val	Pro	Tyr	Phe 135		Trp	Lys	Tyr	Ser 140		Arg	Arg	His	
		Asn	Thr	Gly			Glu	Arg	Asp			Phe	Val	Pro	-	
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Gly	Arg	Thr		165 Met	Leu	Thr	Val		170 Phe	Thr	Leu	Gly	-	175 Pro	Leu	
Tyr	Leu		180 Phe	Asn	Val	Ser	_	185 Arg	Pro	Tyr	Asp	_	190 Gly	Phe	Ala	
Cys		195 Phe	His	Pro	Asn		200 Pro	Ile	Tyr	Asn	_	205 Arg	Glu	Arg	Leu	
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225 Tyr	Ara	Tvr	Ala	Ala	230 Val	Gln	Glv	Val	Ala	235 Ser	Met	Val	Cve	Dhe	240 Tyr	
-1-	5	-1-		245		2111	Cly		250	201			Cys	255	- y -	

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Leu Gln His Thr His Pro Ser Leu Pro His Tyr Asp Ser Ser Glu Trp
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Asp Trp Leu Arg Gly Ala Leu Ala Thr Val Asp Arg Asp Tyr Gly Ile
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                                         300
Leu Asn Lys Val Phe His Asn Ile Thr Asp Thr His Val Ala His His
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Leu Phe Ser Thr Met Pro His Tyr His Ala Met Glu Ala Thr Lys Ala
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                325
Ile Lys Pro Ile Leu Gly Glu Tyr Tyr Gln Leu His Gly Thr Pro Val
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